

ray very sparsely, those of the disk densely hirsutulous with bidenticulate hairs; pappus of about 36-38 graduated persistent hispidulous bristles, the inner 3.8 mm., the outer about 1 mm. long.

CALIFORNIA. Dry grassy hills, Alder Point, alt. 245 m., 23 May 1903, *Tracy 1892* (Herb. Univ. Calif.); on warm grassy slopes, Alder Point, on Eel River, southeastern Humboldt Co., alt. 300 m. (1000 ft.), 20 June 1916, *J. P. Tracy 4735* (type no. 549767, Herb. Univ. Calif.; duplicate, U. S. Nat. Herb.); grassy slopes, Dobbyn Creek, Humboldt Co., alt. 150 m., 15 June 1930, *Tracy 8762* (U. S. Nat. Herb.)

According to information furnished by Mr. Tracy, the plant is frequent but inconspicuous in short grass on warm grassy slopes at elevations of 300 to 1000 feet from about two miles south of Alder Point northeast about five miles to Dobbyn Creek. It is very similar in habit to *Rigiopappus leptocladus*, but taller, and generally grows in better soil, although occasionally the two are found together. The fruiting heads resemble those of *Agoseris heterophylla*, which grows abundantly in the same places.

Bureau of Plant Industry, Washington, D. C.

March, 1937.

VEGETATIONAL SURVEY OF THE LOWER RIO GRANDE VALLEY, TEXAS

ELZADA U. CLOVER

(Concluded from page 66, issue of April 7, 1937)

III. COASTAL CLIMAX ASSOCIATIONS

This area includes the sandy beach, sand dunes (*medaños*), salt flats (*badilla salitrosa*) and the salt grass region known as the *sacahuistal*. There are certain differences in the types of vegetation at different points along the coast. At Red-Fish Bay (Willacy County) where the Sand Belt dips down to the coast, the *zacatal* vegetation persists to the water's edge. Some *Spartina Spartinae* may be found, but in general the typical coast flora is lacking. Just south of the Bay, long estuaries reach inland for some distance and the Raymondville and Port Isabel Clays support the flora common to salt marshes.

Boca Chica offers an excellent opportunity for a study of coast phytogeography. The beach is sandy with shifting dunes. Back of these low dunes there are others sometimes twenty to twenty-five feet high which are stable and covered with vegetation. Barren salt flats and salt marshes reach out into the grassland along the coast, and small islands lie between Brazos Santiago Island and the mainland.

BEACH VEGETATION. There are few plants along the beach which are not found on the dunes. In fact the dunes usually are reached by high tides. *Cakile maritima* var. *aequalis*, *Portulaca*

pilosa, and *Oenothera Drummondii* are found on sandy flats between dunes.

SHIFTING DUNES. *Uniola paniculata*, *Fimbristylis castanea*, *Ipomoea Pes-Caprae*, and *Sesuvium verrucosum* serve as sand binders on the shifting dunes.

PERMANENT DUNES. These dunes are covered by a prairie phase of the coastal vegetation. A list of plants found on permanent and shifting dunes at Boca Chica is listed below: *Distichlis spicata*, *Spartina Spartinae*, *Eleocharis albida*, *Sisyrinchium longipedunculatum*, *Batis maritima*, *Suaeda conferta*, *D. multiflora*, *Atriplex matamorensis*, *Cladotrix lanuginosa*, *Philoxerus vermicularis*, *Portulaca oleracea*, *Sesuvium verrucosum*, *Cakile americana*, *Hoffmanseggia densiflora*, *Indigofera leptosepala*, *Mimosa strigillosa*, *Petalostemon emarginatus*, *Strombocarpa cinerescens*, *Samodia ebracteata*, *Abutilon incanum*, *Oenothera Drummondii*, *Limonium Nashii*, *Sabbatia carnosa*, *Podostemma* sp., *Ipomoea Pes-Caprae*, *Ipomoea stolonifera*, *Opuntia Allairei*, *Agalinis heterophylla*, *Aplopappus phyllocephalus*, *Borrchia frutescens*, *Gaillardia pulchella*, *Erigeron repens*.

THE SALT-FLAT. Salt flats which are covered with water by gulf storms are almost barren. Most vegetation occurs near the margins with a few straggling plants, mostly of *Salicornia*, invading the salt-incrusted flat. *Paspalum distichum*, *Monanthochloë littoralis*, and *Chamaecrista littoralis* venture beyond the margins and an occasional sand dune out in the barren flat has the usual dune vegetation.

LOW ISLANDS. Hurricanes are of infrequent occurrence, sometimes doing little or no damage to the south Texas coast for periods of ten or fifteen years. The flora farther inland becomes fairly well established. Minor storms keep the vegetation of the salt flats and marshes and some of the low islands in stages of both progressive and retrogressive succession (8, 15). Clark Island which lies one mile west of the northern end of Brazos Island is an exception. It is somewhat higher, at least parts of it, than the others, and is also protected by Brazos Island, thus escaping the violent action of the waves. This island is roughly elliptical in shape, measuring about one mile in length and one-half mile across. The north end is several feet above water-level, and is covered with mesquite trees which are ten to twelve feet high. This is a nesting place for herons, and the trees are weighted down with bulky masses of sticks which constitute the nests. A single specimen of *Yucca Trecaleana* measuring ten feet grew on the island, but was blown down in the hurricane of 1933. About one-third of the island is covered by a coastal prairie and upland vegetation, and the southeast portion is low and covered with water in places. The southeast margin is bordered by a low growth of *Avicennia nitida* (black mangrove). *Salicornia*, *Atriplex* and *Suaeda* inhabit the wet area. It is interesting to find a coastal flora such as that of *Avicennia nitida* with gradations to



FIGURE 1



FIGURE 2

PLATE XVI. Fig. 1. *Lophophora Williamsii* growing on the Bordas Scarp eight miles north of Rio Grande City, Starr County. This is the cactus used for religious purposes by the Indians. Fig. 2. *Ferocactus hamatacanthus*. This cactus is fairly abundant along the Rio Grande near Zapata.

the semi-desert vegetation. A complete list of the island flora is given below: *Andropogon littoralis*, *Aristida purpurea*, *Cenchrus pauciflorus*, *Chloris Petraea*, *Eragrostis secundiflora*, *E. sessilispica*, *Monanthochloë littoralis*, *Polypogon monspeliensis*, *Spartina Spartinae*, *Sporobolus argutus*, *Vaseyochloa multinervosa*, *Cyperus uniflorus*, *Eleocharis albida*, *Commelina crispa*, *Yucca Treculeana*, *Batis maritima*, *Cladostrix lanuginosa*, *Atriplex matamorensis*, *Suaeda linearis*, *Salicornia ambigua*, *S. herbacea*, *Lepidium virginicum*, *Baptisia leucophaea*, *Dolicholus americanus*, *Hamosa Nuttalliana*, *Indigofera leptoccephala*, *Prosopis juliflora* var. *glandulosa*, *Sophora tomentosa*, *Strombocarpa cinerescens*, *Kallstroemia parviflora*, *Polygala alba*, *Croton ciliatoglandulosus*, *Galpinsia tubicula*, *Sabbatia carnosae*, *Opuntia Alleirei*, *Avicennia nitida*, *Verbena Hallii*, *Physalis mollis*, *P. viscosa*, *Calceolaria verticillata*, *Solanum triquetrum*, *Stemodia lanata*, *Plantago rhodosperma*, *Aphanostephus skirrobasis*, *Baccharis texana*, *Coreopsis cardaminifolia*, *Gaillardia pulchella*, *Othake robustum*.

THE SACAHUISTAL. This area extends several miles inland. The dominant is *Spartina Spartinae*, in the marshes associated with *Suaeda*, *Salicornia*, and sedges, and farther inland by *Eupatorium odoratum*, *Aplopappus phyllocephalus*, *Franseria confertifolia*, *Pluchea camphorata*, *Senecio glabellus*, *Setaria macrostachya*, and *Sporobolus argutus*. Mesquite trees invade this coastal grass area, with *Opuntia* and some *Yucca*. Finally shrubs, especially *Lycium carolinianum*, *Zizyphus obtusifolia*, *Celtis pallida*, and *Forestiera angustifolia* help form the transition zone between the *sacahuistal* and the *mesquital-chaparral*.

Yucca Treculeana occurs as "forests" near Boca Chica and Port Isabel. The hurricane of 1933 completely wiped out this species at Boca Chica.

BOSCAJE DE PALMA. Probably the most picturesque and certainly one of the most interesting associations in the Lower Rio Grande Valley is the native palm grove ten miles below Brownsville (pl. XVII). Rio de las Palmas was the first name for the river later known as Rio Bravo del Norte (17), and now called El Rio Grande. This first name is found on an old Spanish map (Cantino, 1502) of North America, perhaps the first one made (31). No doubt the name was suggested by the native palms which grew on its banks. This palm, *Sabal texana*, *la palma de micharos*, is one of the four arborescent palms occurring in the continental United States outside of Florida. The others are the delta palm, *Sabal Deeringiana*, of the Mississippi delta, the cabbage tree, *Sabal Palmetto*, of the southeastern Atlantic region, and the fan-leaf palm, *Neowashingtonia robusta*, of the California deserts.

Arthur V. Schott, a geologist and surveyor in the Mexican-United States Boundary Survey, collected plants in the Lower Rio Grande Valley, and probably made the first report of any importance regarding these palms. The following is a quotation



FIGURE 1



FIGURE 2

PLATE XVII. Fig. 1. *Sabal texana*. This palm extends over approximately one hundred acres along the Rio Grande below Brownsville. Fig. 2. *Cordia Boissieri*. When land is cleared native trees are sometimes allowed to remain.

from his report (29): "It is also in the lower portion of this belt [coastal plain of Texas] where the palm tribe is represented by *Chamaerops Palmetto* that the palmetto attains a growth as gorgeous even as that on the lower Mississippi; it extends on the Rio Bravo up to about eighty miles from the Gulf."

Sabal texana in the United States is confined to a limited area in Cameron County near the Rio Grande extending from El Salado ranch ten miles below Brownsville up the river three or four miles, forming a heavy growth. This subtropical forest with its tangle of vines, shrubs, and fallen trees is almost impenetrable. The palms grow to the height of fifty feet on the Rabb ranch where the finest growth occurs. This palm has often been confused with *Sabal mexicana* of southern Mexico. *Arundo Donax* is twenty feet tall here and adds to the tropical appearance of the locality, as does *Malvaviscus Drummondii*. It is difficult to tell what plants rank second or third in dominance, but prominent ones are: *Ulmus crassifolia*, *Pithecolobium brevifolium*, *Celtis mississippiensis*, *Celtis pallida*, *Fraxinus Berlandieri*, *Leucaena pulverulenta*, *Tillandsia usneoides*, and *Arundo Donax*. Below is a list of plants collected from the river's edge into the densest palm growth: *Sabal texana*, *Arundo Donax*, *Echinochloa colonum*, *E. Crusgalli*, *Eragrostis hypnoides*, *Oplismenus setarius*, *Panicum fasciculatum*, *P. purpurascens*, *Paspalum conjugatum*, *Sporobolus Buckleyi*, *Carex Brittoniana*, *Cyperus ochraceus*, *Tillandsia recurvata*, *T. usneoides*, *Commelina longicaulis*, *Smilax renifolia*, *Celtis mississippiensis*, *C. pallida*, *Ulmus crassifolia*, *Persicaria longistyla*, *P. mexicana*, *Rumex Berlandieri*, *Acanthochiton Wrightii*, *Amaranthus hybridus*, *A. spinosus*, *Rivina humilis*, *Clematis Drummondii*, *Roripa Nasturtium*, *Rubus trivialis*, *Erythrina herbacea*, *Mimosa Berlandieri*, *Leucaena pulverulenta*, *Pithecolobium brevifolium*, *Ionoxalis* sp., *Xanthoxylum insulare*, *X. Pterota*, *Malphigia glabra*, *Chamaesyce hypericifolia*, *Poinsettia heterophylla*, *Tragia nepetaefolia*, *Cardiospermum corindum*, *C. Halicacabum*, *Zizyphus obtusifolia*, *Ampelopsis arborea*, *Abutilon Jacquini*, *Malachra urens*, *Malvastrum spicatum*, *Malvaviscus Drummondii*, *Wisadula amplissima*, *Gaura parviflora*, *Passiflora lutea*, *Plumbago scandens*, *Bumelia angustifolia*, *Diospyros texana*, *Forestiera angustifolia*, *Fraxinus Berlandieri*, *Metastelma barbigerum*, *Cuscuta arvensis*, *Phacelia patuliflora*, *Lantana horrida*, *Lippia alba*, *Verbena* (hybrid), *Salvia Greggii*, *Solanum nigrum*, *Melothria pendula*, *Ammannia coccinea*, *Centaurea americana*, *Eclipta alba*, *Erigeron tenuis*, *Eupatorium odoratum*, *Parthenium Hysterophorus*, *Senecio glabellus*, *Verbesina virginica*.

SUCCESSION IN CULTIVATED AREAS

Much of the land below Peñitas has been cleared for several miles back from the river and is under cultivation. Irrigation projects have been responsible for much of this clearing. Some of this land has been abandoned. Primary succession in an un-

irrigated area near Peñitas is characterized largely by the following species: *Panicum firmulum*, *P. Hallii*, *Paspalum Langei*, *Chamaesyce cordifolia*, *Croton leucophyllus*, *Solanum elaeagnifolium*, *Verbena Halei*, *Ambrosia elatior*, *Parthenium Hysterophorus*, and *Verbesina encelioides*. This is usually followed by *Celtis pallida*, *Zizyphus obtusifolia*, *Prosopis juliflora* var. *glandulosa*, and *Opuntia Lindheimeri*. Near the river *Clematis Drummondii*, *Amaranthus hybridus*, *Cuscuta arvensis*, *Cardiospermum Halicacabum*, *Solanum triquetrum*, and *Parthenium Hysterophorus* are some of the first plants to invade an abandoned clearing. In the irrigated section *Cenchrus pauciflorus*, *Cynodon Dactylon*, *Holcus halepensis*, *Setaria macrostachya*, *Amaranthus*, and *Parthenium Hysterophorus* are most important during primary succession.

In many places native trees have been permitted to stand in clearings; and when the land is abandoned, seeds from these trees start new colonies of the former vegetation. Some of these favored species are: *Cordia Boissieri*, *Siderocarpus flexicaulis*, *Diospyros texana*, and *Prosopis juliflora* var. *glandulosa*.

RELATIONS OF EDAPHIC FACTORS AND GEOLOGICAL FORMATIONS TO PLANT DISTRIBUTION

A comparison of the geological map (text fig. 1) and the vegetation map (text fig. 3) shows that in many instances there is a close correlation between the geologic formations and plant distribution in the Lower Rio Grande Valley.

The *zacatal* or prairie grass region conforms almost exactly to the wind-blown sands and beach deposits.

In general, the *mesquital-zacatal* in Zapata County (which is included in the Aguilares Plain) conforms to the Fayette Sandstone formation. In places the surface materials are clay and sand with gravel from the Reynosa formation and consequently areas of chaparral appear in places throughout the *mesquital-zacatal*.

The Reynosa formation covering much of Starr County and a strip along the west side of Hidalgo County is largely *mesquital* divided into the same three phases which continue toward the coast. However, there is a difference in the appearance of the brush. The growth here tends to be smaller and sparser with fewer mesquites present.

The Bordas Scarp begins at Rio Grande City and continues through Starr County to Cuevitas. It extends northward into Jim Hogg County and cuts the northeast corner of Zapata County. The vegetation along this escarpment consists of a sparse growth of *chaparral* with more species of cacti than are found on either side of this elevation.

Terrace deposits in general produce a growth of large mesquites. This is well shown at San Ignacio and Sam Fordyce.

There is little difference in the vegetation on Beaumont clay and the so-called "Fluviatile" deposits except toward the coast. The *chaparral* here shows a more luxuriant growth than that of the Reynosa.

There is no doubt that moisture is an important limiting factor. The vegetation along the river in the lower part of this region is composed of species which require more moisture than those in the upper valley. Some species which grow well near the coast are hardly recognizable for their diminutive size in dry gravel areas.

Salt depressions have characteristic beach and coastal prairie vegetation at their margins, although a few yards distant the inland type of plant growth is dominant. Poorly drained soil has become so impregnated with alkali salts as to become practically useless for farming. This condition naturally limits all vegetation to alkali resistant plants such as the salt grasses, and *Suaeda*, *Varilla texana*, *Salicornia*, and *Lycium carolinianum*.

Hechtia texensis seems to prefer soil of the type found in the Cockfield formation. This formation was deposited in salt and brackish marshes and must still be at least slightly saline since *Varilla texana* (a halophyte) is always associated with it. Dry gravel hills are covered with *Acacia amentacea* often accompanied by *Acacia Berlandieri*, *Leucophyllum frutescens*, *Mortonia Greggii* and *Cordia Boissieri*, species which ordinarily prefer limestone soil. More species of cacti are found in this Lissie Gravel than in any other formation. This may be either because they are better adapted to this soil, or because there is a sparse growth of brush, thus permitting them to have better light conditions.

The most luxuriant vegetation is in the alluvial soil along the Rio Grande below Peñitas. As moisture increases toward the coast the vegetation increases in size and number of species. Plants with tropical affinities are more abundant in the region of Brownsville probably because of better moisture conditions and slightly higher temperature. The soil is more favorable for growth, allowing chance seeds to germinate.

EFFECT OF CHANGES IN PHYSIOGRAPHY

The changing course of the Rio Grande causes changes in vegetation. Alluvial soil is deposited in places and carried away in others. Floods fill up *resacas*, killing some plants and permitting the growth of others. Gulf storms destroy vegetation by wind-action and by blowing salt water inland. The filling of estuaries causes very unstable conditions for plant development. Arroyos dig deeper and wider with each succeeding storm, influencing the vegetation along the banks. Water-holes are formed in the beds of arroyos allowing such trees as *Acacia Farnesiana* and *Parkinsonia aculeata* to become established on the banks.

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SPECIES COLLECTED IN THE LOWER RIO GRANDE VALLEY³

RICCIACEAE

OXYMITRA ANDROGYNA Howe. Dry, red, sandy soil, Rio Grande City.
RICCIA sp. On sandy-loam soil, mesquite woods, Rio Hondo.

LEJEUNEACEAE

FRULLANIA SQUARROSA (R., Bl. & N.) Dumort. On living branches of *Castela Nicholsonii*, Raymondville.

FRULLANIA EBORACENSIS Gottsche. Mesquite woods, Rio Hondo.

POTTIACEAE

PTERYGONEURUM CAVIFOLIUM (Ehrh.) Jur. On dry, sandy loam, Rio Grande City.

TRICHOSTOMUM BRACHYDONTIUM Bruch. On dry, sandy-clay soil, Zapata.

WEISIA ANDREWSII Bartr. On limestone rock in full sunlight, La Joya.

FUNARIACEAE

PYRAMIDULA TETRAGONA (Brid.) Brid. On sandy soil in mesquite woods, Raymondville.

PHYSCOMITRIUM TURBINATUM (Michx.) Brid. On damp alluvial soil, roadside, Barreda.

PHYSCOMITRIUM IMMERSUM Sulliv. In deep cracks made by mud drying after flood, Peñitas.

BRYACEAE

BRYUM ARGENTEUM Hedw. var. LANOSUM Bryol. eur. Dry sandy soil, in low brush, Raymondville.

ERPIDIACEAE

ERPODIUM DOMINGENSE (Brid.) C. Müll. In shade, on decaying wood, Rio Hondo.

THUIDIACEAE

HAPLOCLADIUM MICROPHYLLUM (Hedw.) Broth. On decaying log in moist woods, Palm Grove, Brownsville.

³ Numbers in parentheses refer to collections by the author.

PLAGIOTHECIACEAE

STEREOPHYLLUM WRIGHTII (Sulliv.) Ren. & Card. On decaying log in moist woods, Alamo.

MARSILEACEAE

MARSILEA MACROPODA Engelm. Progreso (18).
MARSILEA VESTITA Hook. & Grev. Mission (115).

FILICINEAE

NOTHOLAENA DEALBATA (Pursh) Kunze. Roma (791).

PINACEAE

TAXODIUM MUCRONATUM Tenore. Havana (1123).

GNETACEAE

EPHEDRA ANTISIPHILITICA Meyer. Edinburg (1593).
EPHEDRA PEDUNCULATA Engelm. Barrocetes Ranch, San Ignacio (1584).

POTAMOGETONACEAE

ZOSTERELLA DUBIA (Jacq.) Small. La Joya Lake (640).

TYPHACEAE

TYPHA LATIFOLIA L. Chihuahua (214).

NALADACEAE

NAIAS GUADALUPENSIS (Spreng.) Morong. Alamo (894).

ALISMACEAE

ECHINODORUS CORDIFOLIUS (L.) Griseb. Alamo (639).
SAGITTARIA VARIABILIS Engelm. Alamo (265).

GRAMINEAE

ANDROPOGON BARBINODIS Lag. Laredo (1278).
ANDROPOGON GLOMERATUS (Walt.) B. S. P. Weslaco (462).
ANDROPOGON LITTORALIS Nash. Padre Island (1633).
ANDROPOGON SACCHAROIDES Swartz. Edinburg (440).
ARISTIDA PURPUREA Nutt. Peñitas (575).
ARUNDO DONAX L. Palm Grove, Brownsville (959).
BOUPELLOU BARBATA Lag. Alamo (8).
BOUPELLOU HIRSUTA Lag. San Ignacio (1586).
BOUPELLOU TRIFIDA Thurb. Salineño (1406).
BRACHIARIA CILIATISSIMA (Buckl.) Chase. Monte Cristo (927).
CENCHRUS INCERTUS M. A. Curtis. San Juan (305).
CENCHRUS PAUCIFLORUS Benth. La Joya (586).
CHLORIS ANDROPOGONOIDES Fourn. Mission (162).
CHLORIS CUCULLATA Bisch. Tabasco (91).
CHLORIS GAYANA Kunth. Donna (625).
CHLORIS PETRAEA Swartz. Clark Island (704A).
CYNODON DACTYLON (L.) Pers. Alamo (433).
DACTYLOCTENIUM AEGYPTIUM (L.) Richt. San Juan (107).
DIGITARIA SANGUINALIS (L.) Scop. Harlingen (1211).
DISTICHLIS SPICATA (L.) Greene. Boca Chica (383).
ECHINOCHLOA COLONUM (L.) Link. Chihuahua (985).
ECHINOCHLOA CRUSGALLI (L.) Beauv. Palm Grove, Brownsville (1518).
ECHINOCHLOA CRUSGALLI ZELAYENSIS (H. B. K.) Hitchc. Alamo (289).
ELEUSINE INDICA (L.) Gaertn. Alamo (1350).
ERAGROSTIS BARRELIERI Daveau. San Juan (451).

- ERAGROSTIS BEYRICHII J. G. Smith. Cuevitas (1095).
 ERAGROSTIS CURTIPEDICELLATA Buckl. La Joya Lake (43).
 ERAGROSTIS HYPNOIDES (Lam.) B. S. P. Palm Grove, Brownsville (950).
 ERAGROSTIS LUGENS Nees. Kingsville (837).
 ERAGROSTIS SECUNDIFLORA Presl. Boca Chica (720).
 ERAGROSTIS SESSILISPICA Buckl. Clark Island (740).
 ERAGROSTIS REPTANS (Michx.) Nees. Alamo (432).
 ERAGROSTIS SPICATA Vasey. Alamo (297).
 ERIOCHLOA PUNCTATA (L.) Desv. Brownsville (1650).
 HETEROPOGON CONTORTUS (L.) Beauv. Linn (847).
 HOLCUS HALEPENSIS L. Alamo (149).
 LEPTOLOMA COGNATUM (Schult.) Chase. Boca Chica (727).
 LEPTOCHLOA DUBIA (H. B. K.) Nees. Alamo (1481).
 LEPTOCHLOA FILIFORMIS (Lam.) Beauv. San Juan (559).
 LEPTOCHLOA NEALLEYI Vasey. Rio Hondo (1580).
 LEPTOCHLOA UNINERVIA (Presl) Hitchc. & Chase. Alamo (918).
 MONANTHOCHLOË LITTORALIS Engelm. Clark Island (759).
 OPLISMENUS SETARIUS (Lam.) Roem. & Schult. Palm Grove, Brownsville (1508).
 PANICUM FASCICULATUM Swartz. Palm Grove (956).
 PANICUM FIRMLUM Hitchc. & Chase. La Joya (580).
 PANICUM HALLII Vasey. La Joya (557).
 PANICUM HIANIS Ell. Encino (836).
 PANICUM NODATUM Hitchc. & Chase. Encino (834).
 PANICUM PURPURASCENS Raddi. Palm Grove, Brownsville (1511).
 PANICUM SPHAEROCARPON Ell. Encino (858).
 PANICUM TEXANUM Buckl. Alamo (1347).
 PAPPOPHORUM BICOLOR Fourn. Arroyo el Tigre (697).
 PAPPOPHORUM MUCRONULATUM Nees. San Manuel Ranch (851).
 PASPALUM CONJUGATUM Berg. Palm Grove, Brownsville (1507).
 PASPALUM DILATATUM Poir. Alamo (1349).
 PASPALUM DISTICHUM L. Boca Chica (365).
 PASPALUM LANGEI (Fourn.) Nash. Tabasco (781).
 PASPALUM LIVIDUM Trin. Alamo (1115).
 PASPALUM STRAMINEUM Nash. Encino (860).
 PASPALUM URVILLEI Steud. Donna (1014).
 PHALARIS CAROLINIANA Walt. Encino (832).
 PHRAGMITES COMMUNIS Trin. Mercedes (630).
 POLYPOGON MONSPELIENSIS (L.) Desf. Clark Island (758).
 SETARIA MACROSTACHYA H. B. K. Rio Hondo (613).
 SETARIA SCHEELEI (Steud.) Hitchc. Alamo (1453).
 SETARIA SETOSA (Swartz) Beauv. Alamo (1453A).
 SETARIA GENICULATA (Lam.) Beauv. Encino (839).
 SPARTINA SPARTINAE (Trin.) Merr. Boca Chica (729).
 SPOROBOLUS ARGUTUS (Nees) Kunth. Clark Island (1256).
 SPOROBOLUS BUCKLEYI Vasey. Palm Grove, Brownsville (1560).
 SPOROBOLUS CRYPTANDRUS (Torr.) Gray. Harlingen (1213).
 SPOROBOLUS WRIGHTII (Munro) Scribn. Boca Chica (402).
 TRICHACHNE CALIFORNICA (Benth.) Chase. Mission (1993).
 TRICHACHNE SACCHARATA (Buckl.) Nash. Mission (174).
 TRICHLORIS MENDOCINA (Phil.) Kurtz. Arroyo Veleño (1290).
 TRICHLORIS PLURIFLORA Fourn. Weslaco (628).
 TRICHOILAENA ROSEA Nees. Donna (466).
 TRICHONEURA ELEGANS Swallen. San Ignacio (1582).
 TRIODIA ALBESCENS Vasey. Harlingen (1025).
 TRIODIA MUTICA (Torr.) Scribn. Salineño (1405).
 TRIODIA PILOSA (Buckl.) Merr. Arroyo el Tigre.
 UNIOLA PANICULATA L. Boca Chica (386).
 VASEYOCHLOA MULTINERVOSA (Vasey) Hitchc. Clark Island (1719).

CYPERACEAE

- CAREX BRITTONIANA Bailey. Progreso (18).
 CYPERUS ACUMINATUS Torr. & Hook. Chihuahua (598).
 CYPERUS ARTICULATUS L. Alamo (1119).
 CYPERUS CYLINDRICUS (Ell.) Britton. Ojo de Agua (995B).
 CYPERUS ELEGANS L. Rio Hondo (1020).
 CYPERUS ERYTHORRHIZOS Muhl. Palm Grove, Brownsville (1529).
 CYPERUS FERAX L. C. Rich. Progreso (15).
 CYPERUS GLOBOSUS Aubl. Monte Cristo (929).
 CYPERUS OCHRACEUS Vahl. Palm Grove, Brownsville (1981).
 CYPERUS OXYCARIOIDES Britton. Alamo (995).
 CYPERUS STRIGOSUS L. Alamo (898).
 CYPERUS UNIFLORUS Torr. & Hook. Alamo (150).
 CYPERUS VIRENS Michx. Rio Hondo (1030).
 ELEOCHARIS ALBIDA Torr. Clark Island (747B).
 ELEOCHARIS PALUSTRIS (L.) Roem. & Schult. Rio Hondo (1012).
 FIMBRISTYLIS CASTANEA (Michx.) Vahl. Boca Chica (771).
 SCIRPUS AMERICANUS Pers. Boca Chica (701).
 SCIRPUS CALIFORNICUS Britton. Brownsville (973).
 SCIRPUS HALLII Gray. Alamo (887).
 SCIRPUS VALIDUS Vahl. La Feria (633).

PALMAE

- SABAL TEXANA (O. F. Cook) Small. Brownsville (1504).

LEMNACEAE

- LEMNA MINOR L. Rio Hondo.
 WOLFFIA COLUMBIANA Karsten. Rio Hondo.

BROMELIACEAE

- HECHTIA TEXENSIS Wats. Roma (523).
 TILLANDSIA BAILEYI Rose. Alamo (1422).
 TILLANDSIA RECURVATA L. La Joya (69).
 TILLANDSIA USNEOIDES L. Tabasco (226).

COMMELINACEAE

- COMMELINA CRISPA Wooton. Roma (161).
 COMMELINA LONGICAULIS Jacq. Alamo (1422).
 SITREAVSIA PULCHERRIMA Bartlett. Port Isabel (974).

PONTEDERIACEAE

- HETERANTHERA LIMOSA (Swartz) Willd. Rio Hondo (1038).
 EICHORNIA CRASSIPES Mart. Brownsville (361).

JUNCACEAE

- JUNCUS ARISTULATUS Michx. Raymondville (833).

LILIACEAE

- ALLIUM ARENICOLA Small. Arroyo el Tigre (1797).
 ALLIUM SCAPOSUM Benth. Boca Chica (1709).
 SMILAX RENIFOLIA Small. Tabasco (227).
 YUCCA RUPICOLA Scheele. San Manuel Ranch (820).
 YUCCA TENUISTYLA Trel. San Ignacio (505).
 YUCCA TRECULEANA Carr. Boca Chica (989).
 YUCCA sp. Peñitas (135).

AMARYLLIDACEAE

- AGAVE MELLIFLUA Trel. El Conchito Ranch, Zapata (1295).
 AGAVE LECHUGUILLA Torr. Roma (477).
 AGAVE sp. Trel. Rio Grande City (284).

- ATAMOSCO TEXANA (Herb.) Greene. Alamo (1421).
 COOPERIA DRUMMONDII Herb. San Juan (4).
 MANFREDA MACULOSA (Hook.) Rose. La Joya (62).
 MANFREDA VARIEGATA (Jacobi) Rose. Alamo (12).
 RUNYONIA LONGIFLORA Rose. Rio Grande City (483).

IRIDACEAE

- SISYRINCHIUM AMOENUM Bicknell. Padre Island (1640).
 SISYRINCHIUM FURCATUM Bicknell. San Manuel Ranch (808).
 SISYRINCHIUM LONGIPEDUNCULATUM Bicknell. Boca Chica (707).

ZINGIBERACEAE

- CROFTIA PARVIFOLIA (Torr.) Small. Edinburg (1587).

SALICACEAE

- SALIX LONGIFOLIA Muhl. Alamo (261).

BATIDACEAE

- BATIS MARITIMA L. Clark Island (764).

FAGACEAE

- QUERCUS VIRGINIANA Mill. N. Willacy County (638).

ULMACEAE

- CELTIS MISSISSIPPIENSIS Bosc. Palm Grove (457).
 CELTIS PALLIDA Torr. La Joya (75).
 ULMUS CRASSIFOLIA Nutt. Tabasco (224).

URTICACEAE

- PARIETARIA OBTUSA Rydb. Alamo (1780).
 URTICA CHAMAEDRYOIDES Pursh. Alamo (1863).

LORANTHACEAE

- PHORADENDRON FLAVESCENS Nutt. Rio Grande City (525).

ARISTOLOCHIACEAE

- ARISTOLOCHIA LONGIFLORA Engelm. & Gray. Arroyo el Tigre (751).

POLYGONACEAE

- ERIOGONUM MULTIFLORUM Benth. Boca Chica (1913).
 PERSICARIA LONGISTYLA Small. Palm Grove, Brownsville (1514).
 PERSICARIA MEXICANA Small. Palm Grove, Brownsville (1455).
 PERSICARIA PENNSYLVANICA (L.) Small. Alamo (903).
 RUMEX BERLANDIERI Meisn. Palm Grove, Brownsville (1530).
 RUMEX CRISPUS L. Weslaco (608).
 RUMEX MEXICANUS Meisn. Tabasco (166).
 RUMEX SPIRALIS Small. Havana (1127). - This was in ...

CHENOPODIACEAE

- ATRIPLEX ACANTHOCARPA (Torr.) S. Wats. Roma (1090).
 ATRIPLEX ARENARIA Nutt. Port Isabel (1263).
 ATRIPLEX CANESCENS (Pursh) Nutt. El Jaral Ranch, Zapata Co. (1581).
 ATRIPLEX MATAMORENSIS Nels. Boca Chica (374).
 CHENOPODIUM ALBUM L. Boca Chica (1710).
 CHENOPODIUM VIRIDE L. San Benito (1929).
 DONDIA CONFERTA Small. Boca Chica (354).
 DONDIA LINEARIS (Ell.) Millsp. Port Isabel (1262).
 DONDIA MULTIFLORA (Torr.) Heller. Boca Chica (377).
 DONDIA sp. Clark Island (329). Possibly a new species.
 SALICORNIA AMBIGUA Michx. Clark Island (767).

Suaeda in text

- SALICORNIA BIGELOVII* Torr. Boca Chica (359).
SALICORNIA HERBACEA L. Clark Island (766).

AMARANTACEAE

- ACANTHOCHITON WRIGHTII* Torr. Palm Grove, Brownsville (1535).
ACHYRANTHES REPENS L. Boca Chica (395).
AMARANTHUS BERLANDIERI (Moq.) Uline & Bray. San Juan (444).
AMARANTHUS HYBRIDUS L. Alamo (1342).
AMARANTHUS SPINOSUS L. Palm Grove, Brownsville (1534).
CELOSIA PANICULATA L. Salino Station, Hidalgo Co. (1609).
CLADOTHRIX LANUGINOSA Nutt. Boca Chica (357).
FROELICHTIA CAMPESTRIS Small. Rio Grande City (1939).
FROELICHTIA DRUMMONDII Moq. N. Hidalgo Co. (855).
PHILOXERUS VERMICULARIS (L.) R. Br. Padre Island (380).

NYCTAGINACEAE

- ACLEISANTHES GREGGII* Standley. San Juan (464).
ACLEISANTHES OBTUSA (Choisy) Standl. Roma (1386).
ALLIONIA NYCTAGINEA Michx. Clark Island (1715).
ANREDERA VESICARIA (Lam.) Gaertn. (1919).
BOERHAAVIA ERECTA L. San Juan (302).
BOERHAAVIA VISCOSA Lag. & Rohr. Rio Grande City (1312).
NYCTAGINIA CAPITATA Choisy. Rio Grande City (187).
WEDELIELLA INCARNATA (L.) Cockerell. Zapata (1358).

PHYTOLACCACEAE

- PHALLOTHAMNUS SPINESCENS* Gray. Rio Hondo (1034).
RIVINA HUMILIS L. Alamo (13).

AIZOACEAE

- MOLLUGO VERTICILLATA* L. Harlingen (1201).
SESUVIUM VERRUCOSUM Raf. Boca Chica (1713).

CACTACEAE

- ACANTHOCEREUS PENTAGONUS* (L.) Britt. & Rose. Rio Hondo (1872).
ANCISTROCACTUS BREVIHAMATUS (Engelm.) Britt. & Rose. La Joya.
ANCISTROCACTUS SCHEERI Salm-Dyck. La Joya (1887).
ASTROPHYTUM ASTERIAS (Zucc.) Lemaire. Rio Grande City (1867).
CORYPHANTHA PIRTLEANA I. Wright. Rio Grande City (15273, Gard. No.)
CORYPHANTHA RUNYONII Britt. & Rose. Rio Grande City (1875).
DOLICOTHELE SPHAERICA (Dietrich) Britt. & Rose. Salineño (1876).
ECHINOCEREUS ANGUSTICEPS Clover. Linn (1870). (Type.)
ECHINOCEREUS BLANCKII (Poselger) Palmer. Alamo (1878).
ECHINOCEREUS ENNEACANTHUS Engelm. La Joya (1874).
ECHINOCEREUS FITCHII Britt. & Rose. Rio Grande City (1871).
ECHINOCEREUS PAPILLOSUM Linke. Rucio (1869).
ECHINOCEREUS PENTALOPHIUS (DC.) Rumpler. La Joya (1890).
ESCOBARIA RUNYONII Britt. & Rose. Tabasco (1886).
FEROCACTUS HAMATACANTHUS (Muhlenpfordt) Britt. & Rose. Zapata
 (1873).
HAMATOCACTUS SETISPINUS Engelm. La Joya (1876).
HOMALOCEPHALA TEXENSIS (Hopffer) Britt. & Rose. La Joya (1868).
LOPHOPHORA WILLIAMSII (Lemaire) Coulter. Rio Grande City (187).
NEOMAMMILLARIA APPLANATA (Engelm.) Britt. & Rose. La Joya (1889).
NEOMAMMILLARIA HEMISPHAERICA (Engelm.) Britt. & Rose. La Joya
 (1885).
NEOMAMMILLARIA HEYDERI (Muhlenpfordt) Britt. & Rose. La Joya
 (1891).
NEOMAMMILLARIA MULTICEPS (Salm-Dyck.) Britt. & Rose. Raymondville
 (1865).

- OPUNTIA ALLAIREI* Griffiths. Boca Chica.
OPUNTIA ENGELMANNII Salm-Dyck. Zapata.
OPUNTIA LEPTOCAULIS DC. Peñitas (29).
OPUNTIA LINDHEIMERI Engelm. Peñitas (35).
OPUNTIA SCHOTTII Engelm. Rio Grande City (1884).
THELOCACTUS BICOLOR (Galeotti) Britt. & Rose. Rio Grande City (1880).
WILCOXIA POSELGERI (Lemaire) Coulter. La Joya (1877).

PORTULACACEAE

- PORTULACA OLERACEA* L. Boca Chica (352).
TALINUM ANGUSTISSIMUM (Gray) Wooton & Standl. McAllen (1001).
TALINUM REFLEXUM Cav. Tabasco (79).
TALINOPSIS FRUTESCENS Gray. Rio Grande City (481).

CARYOPHYLLACEAE

- ALSINE BALDWINII* Small. San Benito (617).

NYMPHAEACEAE

- CASTALIA ELEGANS* Greene. Alamo (944).

RANUNCULACEAE

- CLEMATIS DRUMMONDII* Torr. & Gray. San Juan (1).

MENISPERMACEAE

- COCCULUS DIVERSIFOLIUS* DC. Santa Maria (1215).

PAPAVERACEAE

- ARGEMONE ALBA* Lestib. Mercedes (467).
ARGEMONE MEXICANA L. Alamo (192).
ARGEMONE PLATYCERAS Link & Otto. Chihuahua (601).

CRUCIFERAE

- CAKILE AMERICANA* Nutt. Boca Chica (353).
LEPIDIUM AUSTRINUM (Millsp.) Small. La Joya (1876).
LEPIDIUM VIRGINICUM L. Clark Island (749).
LESQUERELLA AURICULATA (Engelm. & Gray) S. Wats. Barreda (1648).
LESQUERELLA DENSIFLORA (Gray) S. Wats. Zapata (1794).
LESQUERELLA LASIOCARPA (Hook.) S. Wats. Donna (624).
NERISYRENIA CAMPORUM (Gray) Greene. San Ignacio (684).
RADICULA WALTERI (Ell.) Small. Chihuahua (597).
RORIPA NASTURTIUM (L.) Rusby. Palm Grove, Brownsville (1795).
SELENIA sp. Alamo (1424). Possibly a new species.
SYNTHLIPSIS BERLANDIERI Gray. Zapata (1795).

CAPPARIDACEAE

- CRISTATELLA EROSA* Nutt. Monte Cristo (931).
POLANISIA TRACHYSPERMA Torr. & Gray. Rio Grande City (474).

CRASSULACEAE

- LENOPHYLLUM TEXANUM* (J. G. Smith) Rose. Tabasco.

ROSACEAE

- RUBUS TRIVIALIS* Michx. Brownsville (1711).

LEGUMINOSAE

- ACACIA AMENTACEA* DC. Rio Grande City (472).
ACACIA BERLANDIERI Benth. Alamo (1337).

- ACACIA FARNESIANA (L.) Willd. Alamo (293).
 ACACIA GREGGII Gray. San Juan (3).
 ACACIA ROEMERIANA Schlect. Monte Cristo (935).
 DESMANTHUS DEPRESSA (Willd.) Kuntze. San Juan (303).
 CALLIANDRA ERIOPHYLLA (Benth.) Britt. Rio Grande City (1677).
 BAPTISIA LEUCOPHAEA Nutt. Clark Island (769).
 CASSIA BAUHINIOIDES Gray. Rio Grande City (1311).
 CASSIA MEDSGERI Shafer. Edinburg (1588).
 CASSIA PUMILIO Gray. Zapata (679).
 CERCIDIUM FLORIDUM Benth. La Joya (65).
 CERCIDIUM TEXANUM Gray. (1321).
 CHAMAECRISTA CINEREA (Cham. & Schlecht.) Pollard. Starr Co. (1102).
 CHAMAECRISTA LITTORALIS Pollard. Padre Island (1638).
 COLOGANIA sp. Clark Island (746). Possibly a new species.
 COURSETIA AXILLARIS Coult. & Rose. La Lomita (Mission) (1060).
 TEPHROSIA LINDHEIMERI (Gray) Kuntze. Raymondville (1198).
 DAUBENTONIA CAVINILLESII (S. Wats.) Standl. Boca Chica (388).
 RHYNCHOSIA AMERICANA (Mill.) Vail. Clark Island (814).
 RHYNCHOSIA MINIMA (L.) Medic. Weslaco (459).
 ERYTHRINA HERBACEA L. Palm Grove, Brownsville (1925).
 EYSENHARDTIA TEXANA Scheele. La Joya (72).
 HAMOSA NUTTALLIANA (DC.) Rydb. (754).
 HOFFMANSEGGIA CAUDATA Gray. (1275).
 HOFFMANSEGGIA DENSIFLORA Benth. Boca Chica (360).
 INDIGOFERA LEPTOSEPALA Nutt. Boca Chica (704).
 LEUCAENA PULVERULENTA (Schlecht.) Benth. Alamo (455).
 LUPINUS TEXENSIS Hook. La Joya (104).
 MIMOSA BERLANDIERI Gray. Boca Chica (393).
 MIMOSA STRIGILLOSA Torr. & Gray. Boca Chica (712).
 PARKINSONIA ACULEATA L. Alamo (105).
 PAROSELA AUREA (Nutt.) Britton. N. Starr Co. (1106).
 PAROSELA HUMILIS (Mill.) Rydb. Boca Chica (1242).
 PAROSELA NANA (Torr.) Heller. Arroyo el Tigre (694).
 PAROSELA POGONATHERA (Gray) Vail. Havana (646).
 PETALOSTEMON EMARGINATUS Torr. & Gray. Boca Chica (703).
 PYTHECOLOBIUM BREVIFOLIUM Benth. La Lomita (Mission) (1072).
 PROSOPIS JULIFLORA var. GLANDULOSA Torr. San Juan (2).
 SIDEROCARPOS FLEXICAULIS (Benth.) Small. San Juan (7).
 SOPHORA SECUNDIFLORA Lag. San Benito (1743).
 SOPHORA TOMENTOSA L. Boca Chica (768).
 STROMBOCARPA CINERESCENS Gray. Los Fresnos (969).
 VICIA TEXANA (Torr. & Gray) Small. Rio Hondo (611).

GERANIACEAE

- GERANIUM CAROLINIANUM L. Alamo (1779).

OXALIDACEAE

- IONOXALIS VIOLACEA (L.) Small. Alamo (1425).
 IONOXALIS sp. Palm Grove, Brownsville (1512).
 MONOXALIS DICHONDRAEFOLIA (Gray) Small. Rio Grande City (1046).
 OXALIS CORNICULATA L. Alamo (1423).

LINACEAE

- CATHARTOLINUM ALATUM Small. Boca Chica (316).
 CATHARTOLINUM MULTICAULE (Hook.) Small. N. Starr Co. (1097).

ZYGOPHYLLACEAE

- COVILLEA TRIDENTATA (DC.) Vail. San Ignacio (1938).
 GUALIACUM SANCTUM L. Peñitas (89A).
 KALLSTROEMIA PARVIFLORA Norton. Clark Island (1308).

- PORLIERIA ANGUSTIFOLIA Engelm. Tabasco (89).
 TRIBULUS TERRESTRIS L. San Juan (299).

RUTACEAE

- AMYRIS PARVIFOLIA Gray. Rio Hondo (242).
 ESENBECKIA RUNYONII Morton. Santa Maria.
 HELETTA PARVIFOLIA Benth. & Hook. Rio Grande City (1317).
 THAMNOSMA TEXANA (Gray) Torr. Tabasco (581).
 XANTHOXYLUM INSULARE Rose. Rio Hondo (1035).
 XANTHOXYLUM PTEROTA H. B. K. Rio Hondo (239).

SIMARUBACEAE

- CASTELA NICHOLSONII Hook. Rio Hondo (241).
 CASTELARIA TEXANA (Torr. & Gray) Small. Alamo (1501).

MALPIGHIACEAE

- COELOSTYLIS TEXANA Torr. & Gray. Alamo (881).
 MALPIGHIA GLABRA L. Alamo (553).

POLYGALACEAE

- POLYGALA ALBA Nutt. Boca Chica (706).
 POLYGALA BOYKINII Nutt. Clark Island (745).
 POLYGALA MACRADENTIA Gray. Rio Grande City (488).

EUPHORBIACEAE

- ACALYPHA HEDERACEA Torr. La Joya (183).
 ADELIA VASEYI (Coulter) Pax & Hoff. Mission (1077).
 BERNARDIA MYRICAEOFOLIA (Scheele) Gray. Rio Hondo (1036).
 CHAMAESYCE CORDIFOLIA (Ell.) Small. Mission (356).
 CHAMAESYCE HYPERICIFOLIA (L.) Small. Alamo (356A).
 CHAMAESYCE LAREDANA (Millsp.) Small. Rio Grande City (1363).
 CHAMAESYCE SERPENS (H. B. K.) Small. Rio Grande City (1364).
 CROTON CILIATO-GLANDULOSUS Ort. Roma (1392).
 CROTON CORTESIANUS Kunth. Raymondville (190).
 CROTON ENGELMANNII Ferguson. Raymondville (1216).
 CROTON FRUTICULOSUS Engelm. Alamo (1483).
 CROTON LEUCOPHYLLUS Muell. Arg. Ojo de Agua (999).
 CROTON NEOMEXICANUS Muell. Arg. Edinburg (1596).
 CROTON PUNCTATUS Jacq. Padre Island (1635).
 CROTON TORREYANUS Muell. Arg. Rio Grande City (1330).
 CROTON sp. Alamo (1776). Possibly a new species.
 DITAXIS HUMILIS Engelm. & Gray. Arroyo Veleño (1786).
 GALARHOEUS ARKANSANUS (Engelm. & Gray) Small. Alamo (872).
 GALARHOEUS sp. Alamo (889). Possibly a new species.
 JATROPHA BERLANDIERI Torr. Rio Grande City (478).
 JATROPHA SPATHULATA Muell. La Joya (39).
 JATROPHA STIMULOSA Michx. Santa Elena Ranch (1844).
 POINSETTIA HETEROPHYLLA L. San Juan (109).
 STILLINGIA TORREYANA Wats. Zapata (498).
 TRAGIA NEPETAEOFOLIA Cav. Palm Grove, Brownsville (1562).
 TRAGIA URTICAEOFOLIA Michx. Camp Perry (1758).

CELASTRACEAE

- MAYTENUS PHYLLANTHOIDES Benth. Brownsville (417).
 MORTONIA GREGGII Gray. La Joya (1791).
 SCHAEFFERIA CUNEIFOLIA Gray. La Joya (73).
 CARDIOSPERMUM CORINDUM L. Palm Grove, Brownsville (1558).
 CARDIOSPERMUM HALICACABUM L. Tabasco (205).
 SAPINDUS DRUMMONDII Hook. & Arn. Alamo (779).
 SERJANIA BRACHYCARPA Gray. Alamo (1468).

RHAMNACEAE

- COLUBRINA TEXENSIS Gray. Zapata (1033).
 CONDALIA OBOVATA Hook. Havana (1129).
 CONDALIA OBTUSIFOLIA (Hook.) Weberbauer. Rio Grande City (1371).
 KARWINSKIA HUMBOLDTIANA Zucc. Alamo (11).
 MICRORHAMNUS ERICOIDES Gray. Rio Grande City (470).
 ZIZYPHUS OBTUSIFOLIA (Hook.) Gray. Palm Grove, Brownsville (1087).

VITACEAE

- AMELOPSIS ARBOREA (L.) Rusby. Tabasco (209).
 AMELOPSIS MEXICANA Rose. Barreda (1702).
 CISSUS INCISA Desmoul. Zapata (1272).

MALVACEAE

- ABUTILON AMERICANUM (L.) Sweet. Rio Grande City (185).
 ABUTILON INCANUM (Link.) Sweet. Boca Chica (1238).
 ABUTILON JACQUINII Don. Palm Grove, Brownsville (1505).
 ABUTILON TEXENSIS Torr. & Gray. Alamo (1454).
 ABUTILON TRIQUETRUM (L.) Presl. Alamo (1446).
 ABUTILON WRIGHTII Gray. Rio Grande City (489).
 CALLIRRHÖE DIGITATA Nutt. San Ignacio (685).
 CIENFUEGOSIA SULPHUREA (St. Hil.) Garcke. Alamo (1259).
 GAYOIDES CRISPUM (L.) Small. Roma (1391).
 HIBISCUS CARDIOPHYLLUS Gray. La Joya (38).
 KOSTELETZKYA HASTATA Presl. Edinburg (1608).
 MALACHRA URENS Poit. Palm Grove, Brownsville (1526).
 MALVASTRUM COROMANDELIANUM Garcke. Boca Chica (407).
 MALVASTRUM SPICATUM (L.) Gray. Boca Chica (406).
 MALVAVISCUS DRUMMONDII Torr. & Gray. Palm Grove, Brownsville (1845).
 SIDA DIFFUSA H. B. K. Alamo (1498).
 SIDA FILIPES Gray. Roma (1408).
 SIDA HASTATA St. Hil. Las Comitas (1314).
 SIDA PANICULATA L. Rio Hondo (1014).
 SIDA SPINOSA L. Mission (112).
 WISSADULA AMPLISSIMA (L.) R. E. Fries. Palm Grove (1564).

VIOLACEAE

- CALCEOLARIA VERTICILLARIA (Ortega) Kuntze. Clark Island (723).

BOMBACACEAE

- WALTHERIA AMERICANA L. San Isidro Ranch (1840).

STERCULIACEAE

- MELOCHIA PYRAMIDATA L. Olmito (1261).

COCHLOSPERMACEAE

- AMOREUXIA WRIGHTII Gray. Rio Grande City (486).

KOEBERLINIACEAE

- KOEBERLINIA SPINOSA Zucc. La Joya (64).

FLACOURTIACEAE

- XYLOSMA CELASTRINUM (H. B. K.) Kuntze. Combes (1641).

TURNERACEAE

- TURNERA APHRODISIACA Ward. Zapata (1686).
 PASSIFLORA FOETIDA L. Mission (191).
 PASSIFLORA LUTEA L. Palm Grove, Brownsville (1603).

LOASACEAE

- CEVALLIA SINUATA Lag. Zapata (1409).

ONAGRACEAE

- GALPINSIA HARTWEGII (Benth.) Britton. Arroyo el Tigre (695).
 GALPINSIA TUBICULA (Gray) Small. Clark Island (719).
 GAURA DRUMMONDII Torr. & Gray. Weslaco (623).
 GAURA VILLOSA Torr. Las Viboras Ranch (1100).
 HARTMANNIA SPECIOSA (Nutt.) Small. Peñitas (1846).
 JUSSIAEA DIFFUSA Forskal. Rio Hondo (1040).
 KNEIFFIA ARENICOLA Small. Mission (169).
 OENOTHERA DRUMMONDII Hook. Boca Chica (351).

UMBELLIFERAE

- AMMOSELINUM POPEI Torr. & Gray. Chihuahua (573).
 APIUM AMMI (L.) Urban. La Joya (1895).
 ERYNGIUM COMPACTUM Small. Alamo (874).
 EURYTAENIA TEXANA (Torr. & Gray) Small. Santa Elena Ranch (1107).
 HYDROCOTYLE UMBELLATA L. Alamo (787).

PRIMULACEAE

- SAMODIA EBRACTEATA (H. B. K.) Baudo. Boca Chica (318).
 SAMOLUS CUNEATUS Small. Boca Chica (1248).
 SAMOLUS FLORIBUNDUS H. B. K. Rio Hondo (1026).

PLUMBAGINACEAE

- LIMONIUM NASHII Small. Boca Chica (355).
 PLUMBAGO SCANDENS L. Alamo (785).

SAPOTACEAE

- BUMELIA ANGUSTIFOLIA Nutt. Edinburg (1328).
 BUMELIA LYCIOIDES Pers. La Joya (1328A).

EBENACEAE

- DIOSPYROS TEXANA Scheele. Alamo (784).

OLEACEAE

- FORESTIERA ANGUSTIFOLIA Torr. Rio Hondo (1597).
 FRAXINUS BERLANDIERI DC. Palm Grove, Brownsville (1924).
 MENODORA HETEROPHYLLA Moric. Mission (1063).

GENTIANACEAE

- EUSTOMA RUSSELLIANUM (Hook.) Griseb. Chihuahua (199).
 SABBATIA CAMPESTRIS Nutt. N. Hidalgo Co. (831).
 SABBATIA CARNOSA Small. Boca Chica (702).

ASCLEPIADACEAE

- METASTELMA BARBIGERUM Scheele. Palm Grove, Brownsville (1547).
 PODOSTEMMA LONGICORNU (Benth.) Greene. San Juan (1906).
 PODOSTEMMA sp. Boca Chica (320). Possibly a new species.
 VINCETOXICUM BREVICORONATUM (Rob.) Vail. E. Starr Co. (663).
 VINCETOXICUM RETICULATUM (Engelm.) Heller. Barreda (1624).

CONVOLVULACEAE

- CONVOLVULUS INCANUS Vahl. Linn (1612).
 CUSCUTA ARVENSIS Beyrich. Rio Hondo (230).
 CUSCUTA INDECORA Choisy. Boca Chica (390).
 EVOLVULUS ALSINOIDES L. Tabasco (40).
 IPOMOEA CARNOSA Britton. Boca Chica (314).
 IPOMOEA DISSECTA (Jacq.) Pursh. Alamo (1457).
 IPOMOEA FISTULOSA Mart. Alamo (294).
 IPOMOEA PES-CAPRAE Sweet. Boca Chica (323).

- IPOMOEA SINUATA Ort. Raymondville (1196).
 IPOMOEA TRIFIDA (H. B. K.) G. Don. Tabasco (206).

POLEMONIACEAE

- GILIA INCISA Benth. Rio Hondo (1905).
 PHLOX PILOSA L. var. DETONSA Gray. N. Hidalgo Co. (822).

HYDROPHYLLACEAE

- MARILAUNIDIUM HISPIDUM (Gray) Kuntze. Chihuahua (585).
 MARILAUNIDIUM JAMAICENSE (L.) Kuntze. Chihuahua (592).
 MARILAUNIDIUM MACRANTHUM (Choisy) Kuntze. Alamo (909).
 PHACELIA PARVIFLORA Pursh. Combes (1760).
 PHACELIA PATULIFLORA (Engelm. & Gray) Gray. Mercedes (618).

BORAGINACEAE

- COLDENIA CANESCENS DC. Zapata (1847).
 CORDIA BOISSIERI A. DC. Alamo (9).
 EHRETIA ELLIPTICA DC. Alamo (896).
 HELIOTROPIUM CONFERTIFOLIUM Torr. Zapata (682).
 HELIOTROPIUM CURASSAVICUM L. Boca Chica (396).
 HELIOTROPIUM INDICUM L. Boca Chica (202).
 HELIOTROPIUM INUNDATUM Swartz. Alamo (902).
 HELIOTROPIUM PARVIFLORUM L. E. Starr Co. (659).
 LITHOSPERMUM MATAMORENSE DC. Tabasco (676).
 TOURNEFORTIA VOLUBILIS L. Camp Perry (1756).

VERBENACEAE

- AVICENNIA NITIDA Jacq. Clark Island (1251).
 CITHAREXYLUM BERLANDIERI Robinson. Boca Chica (1694).
 GONIOSTACHYUM CITROSUM Small. Rio Hondo (1566).
 HELLERANTHUS QUADRANGULATUS (Heller) Small. Chihuahua (596).
 LANTANA HORRIDA H. B. K. Peñitas (1426).
 LANTANA MACROPODA Torr. Rio Grande City (1681).
 LIPPIA ALBA (Mill.) N. E. Brown. Palm Grove (962).
 LIPPIA BERLANDIERI Schauer. Tabasco (1676).
 LIPPIA LIGUSTRINA (Lag.) Small. Tabasco (10).
 LIPPIA MACROSTACHYA (Torr.) Moldenke. Rio Grande City (1268).
 PHYLA NODIFLORA (L.) Greene. Mission (119).
 VERBENA BIPINNATIFIDA Nutt. Tabasco (106).
 VERBENA CILIATA Benth. Alamo (1450).
 VERBENA HALEI Small. Clark Island (736).
 VERBENA OFFICINALIS L. Barreda (1695).
 VERBENA XUTHA Lehm. Rio Grande City (1618).
 VERBENA (hybrid?). Palm Grove, Brownsville (1519).

LABIATAE

- MELOSOMON CUBENSE (L.) Small. Mission (171).
 MICROMERIA PILOSIUSCULA (Benth.) Small. Camp Perry (1903).
 MONARDA DISPERSA Small. San Juan (5).
 MONARDA PUNCTATA L. Alamo (1046).
 MONARDA sp. N. Hidalgo Co. (807). Possibly a new species.
 SALVIA BALLOTAEFLORA Benth. La Joya (1333).
 SALVIA COCCINEA L. Raymondville (606).
 SALVIA GREGGII Gray. Brownsville.
 SCUTELLARIA DRUMMONDII Benth. Mission (591).
 STACHYS AGRARIA Cham. & Schlecht. Rio Hondo (1051).
 STACHYS DRUMMONDII Benth. Chihuahua (602).
 ZORNIA BRACTEATA (Walt.) Gmel. N. Starr Co. (1841).

SOLANACEAE

- CAPSICUM BACCATUM L. Alamo (1113).
 CHAMAESARACHA CONIODES (Moric.) Britt. Barreda (1714).
 DATURA INNOXIA Safford. Roma (502).
 LYCIUM BERLANDIERI Dunal. Rio Grande City (490).
 LYCIUM CAROLINIANUM Walt. Olmito (1654).
 LYCIUM CHATEAUI Standl. La Joya (74).
 LYCIUM TORREYI Gray. Zapata (1301).
 LYCOPERSICON CERASIFORME Dunal. Alamo (1052).
 NICOTIANA GLAUCA Graham. La Joya (184).
 NICOTIANA REPANDA Willd. Roma (1396).
 PETUNIA PARVIFLORA Juss. Chihuahua (505).
 PHYSALIS CARPENTERI Riddell. Roma (1383).
 PHYSALIS MOLLIS Nutt. Clark Island (1926).
 PHYSALIS VISCOSA L. Los Fresnos (1631).
 PHYSALIS VISCOSA L. var. SPATHULAEFOLIA Gray. Clark Island (728).
 QUINCUCLA LOBATA (Torr.) Raf. Tabasco (598).
 SOLANUM CAROLINENSE L. Alamo (1122).
 SOLANUM ELAEAGNIFOLIUM Cav. Alamo (264).
 SOLANUM NIGRUM L. Alamo (917).
 SOLANUM ROSTRATUM Dunal. Roma (503).
 SOLANUM TRIQUETRUM Cav. San Benito (616).

SCROPHULARIACEAE

- GERARDIA HETEROPHYLLA Nutt. Boca Chica (1252).
 LEUCOPHYLLUM FRUTESCENS (Berlandier) Johnston. (81).
 LEUCOPHYLLUM FRUTESCENS f. albiflorum Clover. A *L. frutescens* differt
 floribus albis haud purpureo-rosaceis. Legit ad Romam, Starr Co., Texas,
Clover 492, in Herb. Mich.
 LEUCOPHYLLUM MINUS Gray. San Benito (1746).
 LINARIA CANADENSIS (L.) Dumont subsp. TEXANA (Scheele) Pennell. Mis-
 sion (1787).
 STEMODIA LANATA Ruiz & Pavon. Clark Island (747).

MARTYNIACEAE

- MARTYNIA FRAGRANS Lindl. Roma (120).

LENTIBULARIACEAE

- UTRICULARIA SUBULATA L. Rio Hondo (1748).

ACANTHACEAE

- JUSTICIA RUNYONII Small. Brownsville (1233).
 CARLOWRIGHTIA GLABRATA Fernald. Mission (1066).
 RUELLIA INTERMEDIA Leonard. La Joya (118).
 RUELLIA NOCTIFLORA (Nees) Gray. Roma (1389).
 RUELLIA TUBEROSA L. Tabasco (92).
 SIPHONOGLOSSA DIPTERACANTHA (Nees) Heller. (1911).
 TUBIFLORA ACUMINATA Small. E. Starr Co. (652).

PLANTAGINACEAE

- PLANTAGO LANATIFOLIA (Coulter & Fish.) Small. Zapata (1922).
 PLANTAGO RHODOSPERMA Decne. Clark Island (1921).
 PLANTAGO VIRGINICA L. var. LONGIFOLIA Gray. Tabasco (675).

RUBIACEAE

- GALIUM APARINE L. Palm Grove, Brownsville (1703).
 MACROSIPHONIA MACROSIPHON (Torr.) Heller. La Joya (554).
 RANDIA ACULEATA L. Mission (1065).
 RICHARDIA BRAZILIENSIS (Moq.) Gomez. Santa Elena Ranch (1109).

CUCURBITACEAE

- CUCUMIS ANGURIA L. La Joya (1897).
 CUCURBITA FOETIDISSIMA H. B. K. Tabasco (1505).
 IBERVILLEA LINDHEIMERI (Gray) Greene. Alamo (1919).
 MELOTHRIA PENDULA L. Alamo (1417).

CAMPANULACEAE

- LOBELIA BRACHYPODA A. DC. Rio Grande City (908).
 LOBELIA CLIFFORTIANA L. Rio Hondo (615).
 LOBELIA FEAYANA Gray. Los Fresnos (1729).

LYTHRACEAE

- AMMANNIA COCCINEA Rottb. Palm Grove, Brownsville (1523).
 HEIMIA SALICIFOLIA Link. Havana (1126).
 LYTHRUM ALATUM Pursh. Mercedes (287).

COMPOSITAE

- ACTINEA LINEARIFOLIA (Hook.) Greene. Zapata (692).
 ACTINEA ODORATA (DC.) Kuntze. Zapata (1693).
 AMBLYOLEPIS SETIGERA DC. Rio Grande City (1832).
 AMBROSIA ELATIOR L. Mission (167).
 AMBROSIA PSILOSTACHYA DC. Mission (160).
 APHANOSTEPHUS RAMOSISSIMUS DC. Raymondville (1210).
 APHANOSTEPHUS SKIRROBASIS (DC.) Trel. Clark Island (765).
 APHANOSTEPHUS SKIRROBASIS var. HALLII (Gray) Blake. Linn (810).
 APLOPAPPUS DRUMMONDII (Torr. & Gray) Blake. Los Fresnos (1732).
 APLOPAPPUS PHYLLOCEPHALUS DC. Boca Chica (714).
 ARCTIUM LAPPALINA L. Roma (1940).
 ASTER EXILIS Ell. San Juan (441).
 ASTER PALMERI Gray. Rio Grande City (1380).
 ASTER SPINOSUS Benth. Pharr (789).
 BACCHARIS GLUTINOSA Pers. Boca Chica (399).
 BACCHARIS TEXANA (Torr. & Gray) Gray. Clark Island (1726).
 BAHIA ABSINTHIFOLIA Benth. Rio Grande City (1359).
 BORRICHIA FRUTESCENS (L.) DC. Clark Island (330).
 CALYPTROCARPUS VIALIS Less. Mission (170).
 CENTAUREA AMERICANA Nutt. Palm Grove, Brownsville (951).
 CIRSIUM UNDULATUM Nutt. ? San Benito (627).
 CLAPPIA SUAEDAIFOLIA Gray. Mercedes (619).
 CONYZA COULTERI Gray. Camp Perry (1757).
 COREOPSIS CARDAMINIFOLIA (DC.) Torr. & Gray. Clark Island (571).
 DYSSODIA BERLANDIERI (DC.) Blake. Zapata (1827).
 DYSSODIA TEPHROLEUCA Blake. Rio Grande City (1825). Type.
 ECLIPTA ALBA (L.) Hassk. Alamo (873).
 ERIGERON CANADENSIS L. Havana (1131).
 ERIGERON REPENS Gray. Boca Chica (713).
 ERIGERON TENUIS Torr. & Gray. Palm Grove (1834).
 EUPATORIUM AGERATIFOLIUM DC. Barreda (1647).
 EUPATORIUM AZUREUM DC. Barreda (1740).
 EUPATORIUM ODORATUM L. Palm Grove, Brownsville (1835).
 EVAX MULTICAULIS DC. E. Zapata Co. (1864).
 FLORESTINA TRIPTERIS DC. San Juan (468).
 FRANSERIA CONFERTIFLORA (DC.) Rydb. Zapata (690).
 GAILLARDIA PULCHELLA Foug. Chihuahua (193).
 GNAPHALIUM SPATHULATUM Lam. Rio Hondo (1044).
 GOCHNATIA HYPOLEUCA (DC.) Gray. San Ignacio (934).
 GRINDELIA COLEPSIS Blake. Brownsville.
 GUTIERREZIA ERIOCARPA Gray. Boca Chica (389).
 HELENIUM LINIFOLIUM Rydb. Raymondville (1769).
 HELENIUM MICROCEPHALUM DC. Mission (163).
 HELENIUM QUADRIDENTATUM Labill. Alamo (906).

- HELIANTHUS ANNUUS* L. Zapata (1828).
HELIANTHUS CUCUMERIFOLIUS Torr. & Gray. Raymondville (1200).
HETEROTHECA SUBAXILLARIS (Lam.) Britt. & Rusby. Combes (1765).
IVA ANGUSTIFOLIA Nutt. Boca Chica (328).
IVA CILIATA Willd. Tabasco (213).
LEPACHYS COLUMNARIS (Sims) Torr. & Gray var. *PULCHERRIMA* (D. Don) Torr. & Gray. Mission (110).
LYGODESMIA TEXANA (Torr. & Gray) Greene. N. Hidalgo Co. (824).
MELAMPODIUM CINEREUM DC. E. Starr Co. (653).
OTHAKE ROBUSTUM Rydb. Clark Island (733).
OTHAKE TEXANUM (Hook.) Bush. Tabasco (93).
PARTHENIUM HYSTEROPHORUS L. Mission (114).
PEREZIA RUNCINATA Lag. Barreda (1622).
PERITYLE MICROGLOSSA Benth. Rio Hondo (1742).
PLUCHEA CAMPHORATA (L.) DC. Boca Chica (367).
PSILOSTROPHE GNAPHALODES DC. San Ignacio (1689).
RUDBECKIA BICOLOR Nutt. San Manuel Ranch (809).
SELLOA GLUTINOSA Spreng. Los Fresnos (1731B).
SENECIO AMPULLACEUS Hook. Palm Grove, Brownsville (1833).
SENECIO GLABELLUS Poir. Brownsville (1644).
SIMSIA CALVA (Gray & Engelm.) Gray. Rio Grande City (1355).
PYRRHOPAPPUS GRANDIFLORA (DC.) Greene. San Benito (1928).
PYRRHOPAPPUS MULTICAULIS (DC.) Greene. Port Isabel (1649).
SONCHUS OLERACEUS L. San Juan (445).
TRICHOORONIS WRIGHTII (Torr. & Gray) Gray. Alamo (876).
TRIXIS RADIALIS (L.) Kuntze. Alamo (1428).
VARILLA TEXANA Gray. Roma (1351).
VIGUIERA STENOLOBA Blake. Mission (173).
XANTHIUM SPECIOSUM Kearney. Roma (500).
VERBESINA ENCELIOIDES (Cov.) Benth. & Hook. Tabasco (172).
VERBESINA VIRGINICA L. Olmito (1645).
ZEXMENIA BREVIFOLIA Gray. Tabasco (90).
ZEXMENIA HISPIDA (H. B. K.) Gray. Rio Grande City (1673).
ZINNIA PUMILA Gray. Rio Grande City (479).

University of Michigan,
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